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October 26, 2001

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

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Ms. Magalie R. Salas  
Secretary  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554

**Re: Oral Ex Parte Presentation in ET Docket No. 98-206**


Dear Ms. Salas:

Pursuant to Section 1.1206 of the Commission's Rules, 47 C.F.R. Sec. 1.1206, Virtual Geosatellite LLC, through counsel, provides notice that on October 25, 2001, Mr. Gerald Helman, Mr. Jay Brosius and the undersigned, met with members of the International Bureau copied below. We discussed Virtual Geosatellite LLC's comments on proposals for Ku-band NGSO-NGSO spectrum sharing as set out in the attachment to this letter.

The original and one copy of this letter with attachment are submitted for inclusion in the record of the referenced proceeding.

Please contact the undersigned with any questions.

Respectfully submitted,

  
Raul R. Rodriguez

RRR:rjc

Attachment

cc (by e-mail with attach.): Thomas S. Tycz  
Alex Roytblat  
Mark Young  
Alyssa Roberts

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# Further Comments on the FCC's NGSO Options

**25 October 2001**

# In Line Avoidance: Diversity and Spectrum Reduction Feeder Link Earth Stations

- **Option III (Avoidance of In-Line Events):**
  - Requires either diversity or spectrum reduction when in-line
  - Diversity requires reservation of capacity on other satellites
    - Equal to entire feeder link earth station load
    - Minimum 25% Space Segment additional cost O/H to Virtual Geo
      - Each satellite can only sustain 3 ilo 4 FL earth stations
      - Remainder reserved for diversity -- used several times daily
  - Spectrum reduction requires reservation of 1/2 total spectrum
    - Limits sustainable spectrum to 1/2 total assigned
    - Half must be abandoned at random times several times daily
    - Remaining half depends on colliding system

⇒ Opt III is not superior to Opt IV in available spectrum

⇒ Opt IV is superior in avoiding added system overhead

# Diversity and Spectrum Reduction

## User Terminals

- **Option III does not work well for User Terminals**
  - Diversity and spectrum reductions keyed on “in-line” events
  - “in-line” defined relative to a specific ground location
  - But User Terminals distributed over the *entire* continent
  - Almost always a region in-line w/ an interfering satellite
  - Particularly bad for the MEO/HEO vs LEO case
    - e.g., Virtual Geo vs Skybridge
  - And wider user terminal beams widen in-line regions
- ⇒ **Option III requires terminal-by-terminal in-line management**
  - Over tens of thousands of terminals
  - Burdensome to say the least

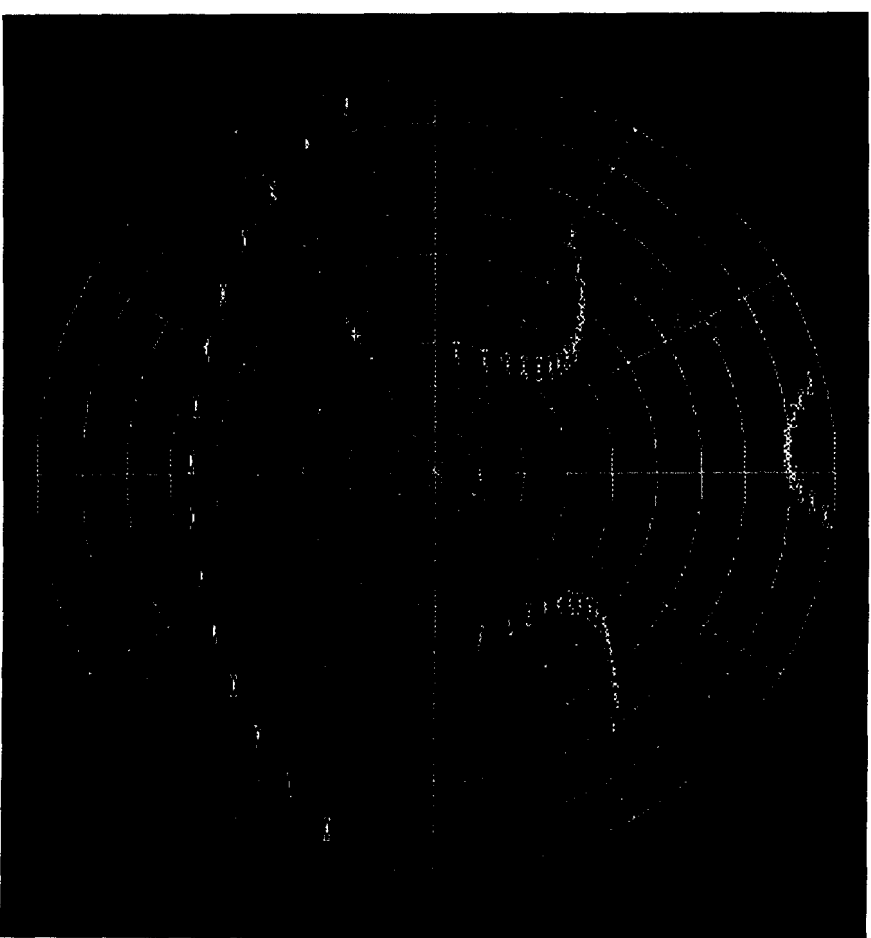
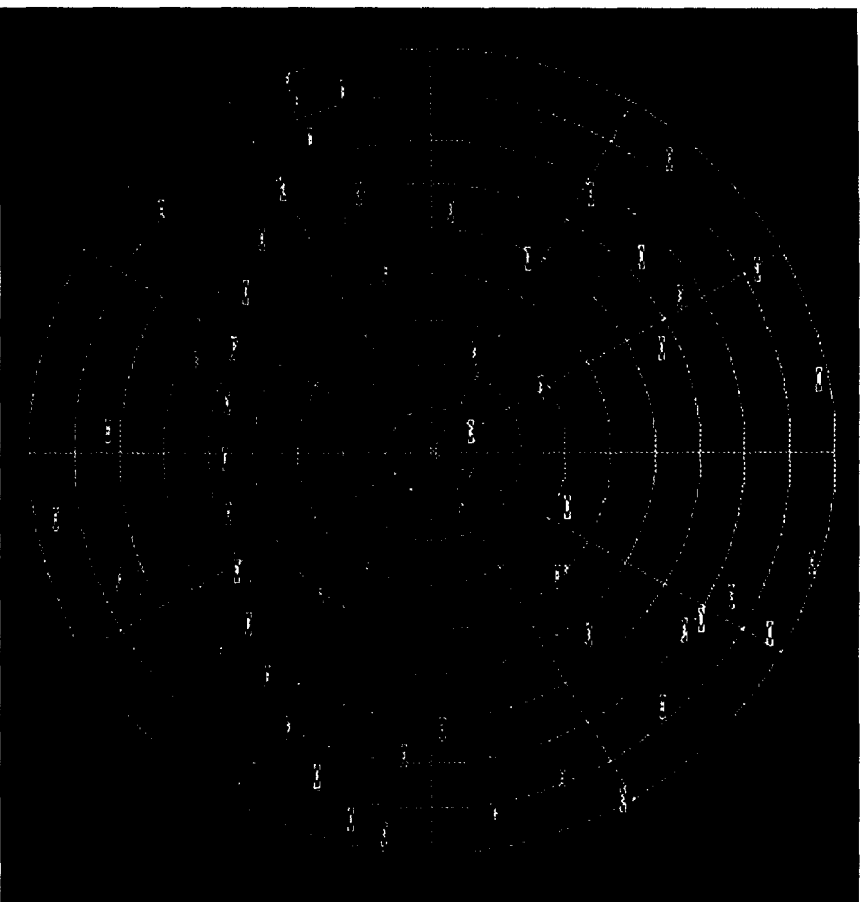
# Uniform Power for Option III

- **A feeder link issue as we see it**
- **Not necessary per se, but simplifies coordination**
  - **Not necessary for GEO either, strictly speaking**
    - **Would result in custom separations, just as for NGSO**
  - **But uniform Power makes life simpler**
  - **Particularly among large numbers**
  - **May be tolerable for NGSO if system numbers always to remain small**
- **Different Power levels among NGSOs**
  - **Lead to customized separation angles**
  - **Complicate coordination among large numbers of systems**
  - **Harder to police**

# In-Line Avoidance vs Homogeneous Constellations

|   | Option III<br>In-Line Avoidance           | Option IV<br>Homogeneous<br>Constellations   |
|---|---|--|
| <b>Spectrum Availability</b>                | <b>Little difference</b>                  |  |
| <b>Interference Mitigation<br/>Burden</b>   | <b>High</b>                               | <b>Low</b>                                   |
| <b>Constellation Design<br/>Flexibility</b> | <b>Autonomy</b>                           | <b>Standards<br/>Conformance</b>             |
| <b>Future Entry</b>                         | <b>None</b>                               | <b>High</b>                                  |
| <b>Potential Systems<br/>Benefiting</b>     | <u><b>Current applicants<br/>only</b></u> | <u><b>Scores of future<br/>licensees</b></u> |

# Confusion vs Harmony



# **In-Line Avoidance vs Homogeneous Constellations**

***Wrapping it up:***

**The benefit of Standards Conformance  
is far larger than its burden**

**Constellation Standards Multiply Opportunity...**

**Standards enable the Future!**